भारतीय मानक
Indian Standard

IS 16340 : 2015
(Reaffirmed 2020)

मेपीक्वाट क्लोराईड, तकनीकी — विशिष्टि

Mepiquat Chloride, Technical — Specification

ICS 65.100.01

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भारतीय मानक ब्यूरो
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Pesticides and Pesticides Residue Analysis Sectional Committee, FAD 01

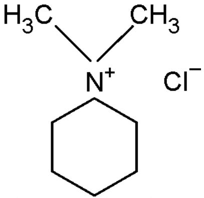
FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Pesticides and Pesticides Residue Analysis Sectional Committee had been approved by the Food and Agriculture Division Council.

Mepiquat chloride, technical is used for improving the plant growth and yield of agricultural crop plants**.**

Mepiquat chloride is the accepted common name by the International Organization for Standardization (ISO) for 1,1-dimethylpiperidinium chloride.

The empirical and structural formulae and the molecular mass of Mepiquat chloride, are given below:

Empirical Formula	Structural Formula	Molecular Mass
$C_7H_{16}ClN$		149.7

In the formulation of this standard, due consideration has been given to the provisions of the *Insecticides Act*, 1968, and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under the *Insecticides Act* and Rules, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

MEPIQUAT CHLORIDE, TECHNICAL — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for mepiquat chloride, technical.

2 REFERENCES

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
1070 : 1992	Reagent grade water – Specification (*third revision*)
6940 : 1982	Methods of test for pesticides and their formulations (*first revision*)
8190 (Part 2) : 1988	Requirements for packing of pesticides: Part 2 Liquid pesticides (*second revision*)
10946 : 1996	Methods of sampling for technical grade pesticides (*first revision*)

3 REQUIREMENTS

3.1 Description

The material shall be in the form of a colourless liquid. It shall be free from extraneous matter.

3.2 The material shall also comply with the requirements given in Table 1.

4 PACKING

The material shall be packed in 200 litre polylined mild steel drums. The container shall also meet the general requirements given in IS 8190 (Part 2).

5 MARKING

5.1 The containers shall be securely closed and the following information shall be marked legibly and indelibly on each container in addition to any other information, as is necessary under the *Insecticides Act*, 1968 and Rules framed thereunder:

a) Name of the material;
b) Name and address of the manufacturer;
c) Batch number;
d) Date of manufacture;
e) Date of expiry;
f) Net quantity;
g) Nominal mepiquat chloride content, percent (*m/m*);
h) Cautionary notice worded as in the *Insecticides Act*, 1968 and Rules framed thereunder; and
j) Any other information required under the *Legal Metrology (Packaged Commodities) Rules,* 2011.

Table 1 Requirements for Mepiquat Chloride, Technical

(*Clause* 3.2)

Sl No.	Characteristics	Requirement	Method of Test, Ref to	
			Annex	Clause No. of IS 6940
(1)	(2)	(3)	(4)	(5)
i)	Mepiquat chloride content, percent by mass, *Min*	50.0	A	—
ii)	Relative density at 30 ± 1°C	1.0 – 1.1	—	5

5.2 BIS Certification Marking

The product may also be marked with the Standard Mark.

5.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act,* 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING

Representative sample of the material shall be drawn as prescribed in IS 10946.

7 TESTS

7.1 Tests shall be carried out by the methods referred to in col 4 and col 5 of Table 1.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and reagent grade water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities, which affect the results of analysis.

ANNEX A

[*Table* 1, *Sl No.* (i)]

DETERMINATION OF MEPIQUAT CHLORIDE CONTENT

A-1 PRINCIPLE

Mepiquat chloride content is determined by gravimetric method. It is precipitated out as mepiquat tetraphenyl borate. The precipitate is dried and weighed, and the amount of mepiquat chloride present in the sample is computed.

A-2 APPARATUS

A-2.1 Analytical Balance, with an accuracy of 0.1 mg.

A-2.2 Filtration Assembly

A-2.3 Oven

A-2.4 Sintered Glass Crucible (G4)

A-2.5 Desiccator

A-2.6 Standard Glassware

A-3 REAGENTS

A-3.1 Aluminium Chloride, AR grade, or equivalent.

A-3.2 Sodium Tetraphenyl Borate, AR grade, or equivalent.

A-3.3 Distilled Water

A-4 PROCEDURE

A-4.1 Preparation of Aluminium Chloride (10 Percent) Solution

Weigh about 2.5 g of aluminium chloride in to a 25 ml volumetric flask. Dissolve it in distilled water and make up the volume up to the mark with distilled water. Shake well to homogenize.

A-4.2 Preparation of Sodium Tetraphenyl Borate (2 Percent) Solution

Weigh accurately about 2 g of sodium tetraphenyl borate in to a 100 ml volumetric flask. Dissolve it in distilled water, and make up the volume up to the mark with distilled water. Shake well to homogenize

A-5 ESTIMATION

Weigh accurately about 5 g of the mepiquat chloride sample in to a 100 ml standard volumetric flask, and make up the volume up to the mark with distilled water. Shake well to homogenize. Pipette out 10 ml of this solution into a 100 ml glass beaker; add 10 ml distilled water, and 1 to 3 drops of aluminium chloride solution. Add 20 ml of freshly prepared sodium tetraphenyl borate solution under stirring. Allow the solution to stand for 30 min, with occasional stirring. Transfer the precipitate quantitatively into the pre-weighed sintered glass crucible (G4). Filter the precipitate by applying vacuum, and wash it with distilled water (15 ml each time). Continue the washing till the washings are free from chloride. Test the washings with silver nitrate till there is no turbidity. Dry the crucible at 105° C for about 2 h in an oven, and cool the crucible in a desiccator and weigh. Continue the heating, cooling and weighing till the final weight is constant. Calculate the mepiquat chloride content as indicated under **A-6**.

A-6 CALCULATION

$$\text{Mepiquat chloride content, percent } (m/m) = \frac{(W_2 - W_1)\times 149.7\times 10\times 100}{W_3\times 433.4}$$

where

W_1 = weight of the empty crucible;

W_2 = final weight of the crucible with dry precipitate; and

W_3 = Weight of sample taken for the test.

Equivalent weight of mepiquat chloride = 149.7

Molecular weight of mepiquat tetraphenyl borate = 433.4

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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